sented in the figure. I have repeated, with this apparatus, the classical experiment of Hall on carbonate of lime. A fragment of chalk, heated in a spiral of platinum, diminishes sensibly in volume, while it is being changed into a hard body of a brownish-yellow colour, which dissolves slowly in acids, at the same time liberating carbonic acid. Also, our fellow-worker, M. Debray, has long since shown that Iceland spar can be carried to a high temperature in carbonic acid without being changed, and without losing its transparency. I have also found that a crystal of spar transformed to chalk on the surface by the action of heat under ordinary pressure recovers the lost carbonic acid, but not its primitive transparency; I have not been able to effect fusion of the spar in the course of my experiments.

To sum up, the apparatus which I have the honour to make known, and which I have used for several years past, in experiments upon the electric light under pressure, researches which I have carried on with M. Violle in his laboratory at the Normal School, will be able to render, I hope, numerous services to chemists as well as to mineralogists.

L. CAILLETET.

NOTES.

AT the Bath meeting of the British Association, which will begin on September 5, Prof. Schuster will preside in Section A (Mathematics and Physics); Prof. Tilden in Section B (Chemistry); Prof. Boyd Dawkins in Section C (Geology); Mr. Thiselton Dyer in Section D (Biology); Colonel Sir C. W. Wilson in Section E (Geography); Lord Bramwell in Section F (Economic Science and Statistics); Mr. W. H. Preece in Section G (Mechanical Science); and General Pitt-Rivers in Section H (Anthropology).

THE Croonian Lecture of the Royal Society will, at the request of the Council, be delivered this year by Prof. W. Kühne, of Heidelberg. As is well known, Prof. Kühne has for many years devoted attention to the endings of nerves in muscle, and in the Croonian Lecture he proposes to dwell on the light thrown on the nature of muscular contraction and nervous action by the study of these nerve-endings. Since the rooms of the Royal Society are not well adapted for showing illustrations to large audiences, the lecture, which will be largely illustrated, will be delivered, by the permission of the Managers of the Royal Institution, in the lecture theatre of the Royal Institution. The date fixed is Monday, May 28, at 9 p.m.

IN reply to a question put by Lord Herschell in the House of Lords on Monday, Lord Cranbrook stated that he had come to the determination to recommend the issue of a small Royal Commission to inquire as to the necessity for a Teaching University for London, and he hoped that at no great distance of time it would be able to report upon the subject.

IN accordance with the rule which empowers the election of nine persons annually "of distinguished eminence in science, literature, or the arts, or for public services," Prof. A. W. Rücker, F.R.S., has been elected a member of the Athenæum Club.

THE Royal Meteorological Society's ninth annual Exhibition of Instruments will be held at the Institution of Civil Engineers, 25 Great George Street, Westminster, in conjunction with the Society's meeting on Wednesday, the 21st inst., and will be very interesting and instructive. The Exhibition is devoted to apparatus connected with atmospheric electricity. A most valuable collection of some fifty photographs of flashes of lightning from all parts of the world will be shown, as well as some curious effects of damage by lightning, including the clothes of a man torn off his body by lightning, &c. The Exhibition will remain open till Friday, the 23rd inst. Persons not Fellows, wishing to visit the Exhibition, can obtain tickets on application to Mr. W. Marriott, Royal Meteorological Society, 30 Great George Street, S.W.

A PLANT of the common coffee (*Coffea arabica*) is now loaded with ripe fruit in the palm-house at Kew. Seldom, even on tropical plantations, is a tree to be seen with such a crop. Such an object-lesson should not be missed by those who take an interest in economic botany.

THE March Bulletin of Miscellaneous Information, issued from the Royal Gardens, Kew, contains papers on Forsteronia rubber, patchouli, West African indigo-plants, vanilla, streblus paper, urera fibre, and tea. In the last of these papers valuable information is given as to the growth of tea in Jamaica, Madagascar, and Natal.

AN excellent biographical sketch of the late Asa Gray, by James D. Dana, appears in the *American Journal of Science* for March. The article is also issued separately.

A HEAVY gale was experienced last Sunday in nearly all parts of the British Islands, the storm continuing in many places throughout the entire day. The greatest violence of the gale was felt over the southern districts of England and in the English Channel, where the direction of the wind was from the south-west and west. In Ireland, Scotland, and the North of England, the direction of the wind was easterly, the central area of the disturbance passing completely over the middle of England from west to east. At 8 o'clock on Sunday morning the centre of the storm was close to Pembroke, where the barometer was reading 28·57 inches, and at 6 o'clock in the evening it was over Lincolnshire, the barometer reading 28·8 inches. The storm afterwards crossed the North Sea, and at 8 o'clock on Monday morning the centre had reached Holland, and was still travelling in an easterly direction. At Greenwich the anemometer registered a pressure of 31 pounds on the square foot at 5 p.m. on Sunday, which is equal to an hourly velocity of about 80 miles. The feature of especial scientific interest with respect to this storm is the sudden manner in which it appeared on our coasts: it practically arrived without any warning, and appears to have been formed almost within the area of the British Islands. It would seem to be a secondary or subsidiary disturbance to the storm area which was situated over Scotland on Saturday, and was apparently formed in the south-western segment of the parent cyclone, which is the favourite position for storm development. The passage of such a storm across our islands illustrates very clearly the immense difficulty which underlies any system of forecasting.

IN vol. iii., part 2, of the Indian Meteorological Memoirs, recently published, Mr. Blanford has continued his discussion of the rainfall of India. Part 1, which dealt more particularly with the average conditions of rainfall, was fully noticed in NATURE (vol. xxxvii. p. 164). The part now in question relates to the variations and vicissitudes of rainfall in past years, and their connection with other elements. With the view of ascertaining whether any general laws can be detected, an endeavour is made to determine what peculiarities are associated with the different distribution of rainfall, *e.g.* the variations of prevailing wind currents, distribution of atmospheric pressure, and the frequency and courses of cyclonic storms. The periodical recurrence of droughts and famines since 1769 is recorded, and, from general conclusions drawn, it appears that serious droughts occur in Southern India at intervals of nine to twelve years, and that they generally happen about a year before the sunspot minimum. In Northern India, droughts sometimes occur in years of maximum sunspots.

At the meeting of the French Meteorological Society, on February 7, it was announced that M. Janssen had offered five prizes, consisting of silver medals, for the best works relative to the application of photography to meteorology, and M. Teisserenc de Bort offered a similar prize for the best measurements of the height of clouds. M. Moureaux (Secretary) presented a paper on the periodicity of disturbances of declination and horizontal force at Parc-Saint-Maur Observatory for the years 1883–87, showing, by means of curves, that the monthly values of both those elements exhibited two maxima at the equinoxes, and two minima at the solstices; and that, while the monthly variation of the number of disturbances appeared to follow a general law, the diurnal variation seems to be subject to complex laws. M. H. Lasne presented a note on the gyratory movements of the atmosphere, in connection with the experiments of MM. Weyher and Colladon on the motions of fluids. M. Maillot exhibited a kite, arranged to maintain a constant height for some time, and designed for the purpose of facilitating the registration of variations of temperature at certain altitudes.

A tetrasulphide of benzene has been prepared in the pure state by Dr. Otto, of Brunswick (*Journ. für. prakt. Chemie*, 1888, Nos. 3 and 4). When a current of sulphuretted hydrogen gas is led through a warm dilute solution of benzene-sulphinic acid, $C_6H_6SO_2$, in alcohol, the sulphinic acid is reduced to phenyl-disulphide, $(C_6H_5)_2S_2$, a substance already well known. The behaviour, however, is entirely different when a very strong solution is employed: the liquid becomes rapidly yellow, and eventually monoclinic crystals of sulphur and a yellow oil separate. This yellow oil was found to consist of phenyl-tetrasulphide, $(C_6H_5)_2S_4$, the analyses indicating an exceptionally pure product, after careful separation from the free sulphur by dissolving in ether and subsequent evaporation. This tetrasulphide at the ordinary temperature is a very viscid, heavy, highly refracting oil, possessing an unpleasant odour reminding one of mercaptan. It is a comparatively stable compound, remaining unattacked on treatment with sodium sulphite, even when warmed for a long time; but on warming with colourless ammonium sulphide it is reduced to disulphide, polysulphide of ammonium being formed. According to Klason, phenyl-tetrasulphide is also the product of the action of dichloride of sulphur, S_2Cl_2, upon thio-phenol, $C_6H_5 . SH$, the mercaptan of the benzene series, and Otto shows that this is really the case, the reaction going best when the two substances are gradually mixed in carbon bisulphide solution. No extraneous heat is necessary, the operation being itself attended by a considerable evolution of heat. On distilling off the bisulphide of carbon, the resulting oil is found to be identical with the phenyl-tetrasulphide prepared in the above manner.

The thirty-ninth Bulletin of the U.S. Geological Survey consists of a paper embodying the results of the investigations of Mr. Warren Upham upon the upper beaches and deltas of the extinct Lake Agassiz, which, in Glacial times, occupied the basin of the Red River of the North. Mr. T. C. Chamberlain, geologist in charge of the Glacial Division, in transmitting Mr. Upham's paper to the Director of the U.S. Geological Survey, for publication, wrote:—"This is but an initial contribution, embracing only so much of the data gathered as from their degree of completeness and interest warrant present publication as a record of results. The investigation is still in progress, and the general discussion of data and the eduction of conclusions are reserved until its completion. Meanwhile the great mass of carefully-determined facts here recorded will, besides their inherent independent value, be of important and immediate service to the students of other extinct and shrunken Glacial lakes."

The U.S. Department of Agriculture has issued an interesting descriptive catalogue of manufactures from American woods, as shown in the exhibit of the Department at the Industrial and Cotton Exposition at New Orleans. The compiler is Mr. C. R. Dodge. He has brought together many interesting facts about the uses of woods in architecture and building, in transportation, in implements of industry, in articles relating to trade, in articles for man's physical comfort or luxury, and in articles for education, culture, or recreation. There is also a paragraph on "miscellaneous uses," under which are such headings as "Gun-stocks," "Artificial Limbs," "Crutches," and "Umbrella-sticks and Canes."

Messrs. Gurney and Jackson will issue in April the first part of "An Illustrated Manual of British Birds," by Mr. Howard Saunders. The work will be completed in about twenty monthly parts.

We have received the eighteenth Annual Report of the Wellington College Natural Science Society. It contains a record of much good work done during the past year. The Report includes abstracts of lectures delivered before the Society, observations made of the plants, insects, and birds contained in the Royal Meteorological Society's lists, and a meteorological report for every day of 1887.

In the twelfth Annual Report of the President of the Johns Hopkins University, Baltimore, Dr. Gilman says that during the last year the number of teachers in connection with the institution was slightly enlarged, and the number of students considerably increased. A new department of instruction—pathology—was initiated; a physical laboratory, the largest and costliest building yet erected for the University, was completed and occupied; a building was set apart for the petrographical laboratory; and an astronomical observatory, for the instruction of students, was equipped. The cost of the physical laboratory, including the land, furniture, gas-fitting, steam-heating, and astronomical dome (but not including large amounts paid previously for instruments and apparatus, and not including the dynamos, nor the telescope), stands, in the books of the treasurer, 174,765·86 dollars. This building will be used by classes studying mathematics, astronomy, and physics.

The Calendar, for the year 1888, of the Royal University of Ireland has just been issued. The Drapers' Company have offered an exhibition of the average annual value of £35 for three years, to be awarded, on the result of the matriculation examination of this University, to the girl who, complying with certain conditions stated in the Calendar, shall be awarded either first or second class honours in at least two subjects, and who shall obtain the highest aggregate of marks at the examination to be held on July 4 next.

We have received the Calendar, for 1887–88, of the Imperial University of Japan. An address by President Watanabe, on the occasion of the graduation ceremony, July 9, 1887, is printed as an appendix. If we may judge from the tone of this address, the University is in a prosperous condition, and doing justice, in its courses of instruction, to science no less than to literature and law.

On February 12, Mr. Jeremiah Curtin read, before the Anthropological Society of Washington, a paper of some interest on the folk-lore of Ireland. Last year Mr. Curtin went to Ireland for the express purpose of finding out how far the old "myths and tales" were still alive in the minds of the people. He visited some secluded parts of the western coast, and "took down personally a large body of myths and stories, some very long, others not so long." "This collection of materials," he says, "is sufficient to fill a couple of 12mo volumes, and will give some idea of what yet remains in the Celtic mind of Ireland. It is, however, but a small part of the mental treasure still in possession of the people."

In the Proceedings of the American Philosophical Society (July–December 1887) there is a most interesting paper by Dr. D. G. Brinton on ancient footprints in Nicaragua. The discovery of human footprints in volcanic rocks near the shore of Lake Managua, Nicaragua, under circumstances which seemed to assign to them a remote antiquity, was announced several years ago. Dr. Brinton refers especially to a specimen on tufa sent to him from Nicaragua, by Dr. Flint, an accurate representation of which accompanies the paper. It is the impression of a left foot. The total length of the impression is 9½ inches, the breadth at the heel 3 inches, at the toes 4½ inches. The apparent length of the foot itself was 8 inches. The instep was high, and the great toe large, prominent, and exceeding in length the second toe. The greatest depth of the impression is at the ball of the foot, the weight being evidently thrown forward, as in vigorous walking. At this part the maximal depression below the plane of the superficies is 2 inches. Dr. Brinton has no doubt as to the genuineness of the footprints; but their antiquity, he thinks, is uncertain. His own opinion is that there is not sufficient evidence to remove them beyond the present post-Pliocene or Quaternary period.

PROF. DAVID P. TODD, astronomer in charge of the recent American Eclipse Expedition to Japan, has issued a Preliminary Report (unofficial) on the total solar eclipse of 1887. Associated with this document is a Preliminary Report by Dr. W. J. Holland, naturalist of the Expedition.

WE have received an illustrated catalogue of the astronomical instruments and observatories of Sir Howard Grubb, Dublin. During the last few years Sir Howard Grubb has executed important astronomical work for many Governments, Universities, scientific Societies and Academies, and the catalogue affords striking proof of the care he takes to bring his various methods and processes to perfection.

MR. STANFORD has issued an interesting volume, by Mr. A. B. Macdowall, entitled "Facts about Ireland." It is an attempt to show, by means of curves, the recent history of various elements in the social life of the Irish people. Sections are devoted to population, agriculture, education, emigration, evictions and drunkenness, crime, consumption of spirits, bank deposits, &c., and occupations. The mode of representation, which has been made familiar to most people by weather charts, has enabled Mr. Macdowall to bring together in brief compass a great mass of information about some very complicated and difficult subjects.

LAST month Mr. J. Clayton read before the Bradford Naturalists' Society a paper on *Pinus sylvestris*. This fact is worth mentioning, because by using the autocopyist apparatus the author was able to give each member a sheet of drawings, and another of explanations. We have received specimens of these sheets, and it seems to us that the plan might often be adopted with advantage by readers of papers, and by lecturers, on scientific subjects.

INQUIRIES have been made by several correspondents as to the photographic apparatus used by M. Marey in obtaining the results as to the flight of birds set forth in the article in *La Nature* of which we lately printed a translation (p. 369). No complete account of the apparatus has yet appeared, but a summary of the facts relating to it was given in the *Comptes rendus* for July 3, 1882. A note on the subject was printed in the same publication on August 7, 1882. M. Marey proposes to give a full description in a work on the flight of birds and insects, which will be issued in the course of the present year. The object is to obtain an indication, at every instant, of the swiftness of the moving body which is to be photographed, in its passage from point to point. To secure this indication it is necessary to produce, at known intervals, equal to one another, and as short as possible, interruptions in the arrival of light into the interior of the photographic apparatus. These interruptions M. Marey obtains by causing to turn, before the objective, by means of machinery, a wheel which makes ten revolutions in a second. This wheel has ten spokes, each one of which, in its passage, interrupts the light. The "eclipses" thus caused occur, therefore, a hundred times per second; so that in the photograph the space between two consecutive points represents the space crossed by the photographed body in 1/100 of a second. In order to indicate the relative positions of the different parts of the body at the same instant, M. Marey makes one of the spokes of the wheel twice as large as the others. The result, of course, is that there is a longer "eclipse" at the moment when this spoke passes. This arrangement enables the observer to determine without hesitation the relative positions of the different points of the body at every tenth of a second; and it has also the advantage of facilitating the calculation of the times in which the movements are made.

AT Stevens's rooms, on Monday, an egg of the extinct great auk (*Alca impennis*) was sold to Mr. J. Gardner for £220. It belonged to the collection of Mrs. Wise, whose husband bought it of a dealer in Oxford Street in 1851 for £18. It was originally brought to England from Paris, and is now said to have been bought for America.

THE Exhibition of Japanese engravings at the Burlington Fine Arts Club, and that of Japanese pictures in the White Gallery in the British Museum, contain much that is of a specially scientific interest; as, indeed, could scarcely fail to be the case with such exhaustive and well-arranged collections of the pictorial art of a people who, beyond all others, went to Nature herself as the fount of their inspiration. Thus the collection of guide-books and topographical hand-books in cases K, L, and M, at the Burlington Club, give a remarkable picture of the physical features of Japan, and one that, taken in conjunction with such a work as Dr. Rein's, should be of much assistance to geographers. Probably no literature in the world is so plentifully supplied with guide-books as that of Japan; every province, town, and district, has one or more of its own. In many cases they are works of ambitious scope and wide utility. They indicate "all the spots famous for landscape beauties, collect learned records of the historical and legendary lore of the localities described, enumerate the various objects of curiosity and archæological importance preserved in the neighbourhood, contribute scientific notes upon the flora and fauna of the district, and open a fund of practical information as to industries, commerce, and a hundred other matters of interest both to resident and visitor." Botany is remarkably well illustrated in the books shown in case O; while the silhouettes in case H, traced with great accuracy from nature, represent almost every type of the lower middle class Japanese, and should be of some ethnographical value, especially as there is a considerable number of them. The many hundreds of birds and other animals represented in the British Museum collection (it will of course be understood that we are now referring to the whole of the Anderson Collection, consisting of about 4500 examples, not merely to the 273 on exhibition) would form a supplement to the works of Siebold and later writers. For the student of religions the Buddhistic pictures supply many details not to be found in any written records, and the many volumes of popular picture books show a thousand elements of Oriental folk-lore, customs, and handicrafts that are now on the verge of extinction.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♀) from India, presented by Mrs. A. Ballard; a White-fronted Capuchin (*Cebus albifrons* ♂) from South America, presented by Mrs. E. A. Lediard; a Binturong (*Arctictis binturong*) from Malacca, presented by Mr. J. P. Rodger, of Selangor, Malay Peninsula; a Common Quail (*Coturinx communis*), captured at sea, presented by Captain Christian; a Brazilian Tortoise (*Testudo tabulata*) from Brazil, deposited; four Cape Colys (*Colius capensis*) from South Africa, received in exchange.

OUR ASTRONOMICAL COLUMN.

ANNALS OF HARVARD COLLEGE OBSERVATORY.—We have received Part 2 of vol. xiii. of the Annals of Harvard College Observatory, containing zone observations with the transit wedge photometer attached to the 15-inch equatorial. These observations were undertaken in order to extend our knowledge of the relative brightness of the fainter stars, and to determine the scales of magnitude employed in the estimates of certain observers, as compared with magnitudes as obtained by means of the meridian photometer. These zone observations were not, however, made with the meridian photometer, but with an adaptation of Prof. Pritchard's wedge photometer, which had been devised by Prof. Pickering. Instead of slipping the wedge along by hand, the telescope and wedge are fixed, and the star is carried from the thin part of the wedge towards the thick by the diurnal motion. An occulting bar is fixed near the thin edge, and the interval between the time of the occultation of a star by the bar, and its extinction by the wedge, is proportional to the magnitude of the star on the assumption of a uniform scale of absorption throughout the wedge. In this way the relative magnitudes, right ascensions, and (by estimating the point on the bar where they are occulted) the declinations of a number of stars were determined with great rapidity, and the results made comparable with magnitudes observed with the meridian photometer by the observation of a sufficient number of standard stars. The observations were made in three zones each 10′ in breadth, and lying immediately to the south of N. Decl. 1°, 50°, and 55°, the first zone being part of those observed more than twenty years ago by Prof. Bond, and the other two being situated on the north and south margins of the zone recently revised with the Harvard College meridian circle. A comparison of the D.M. magnitudes between the 7th and 9th with magnitudes as determined in the preceding manner show that the former closely correspond to the magnitudes derived from the mean of the three zones, the zone at 1° N. giving a value of about two-tenths of a magnitude less than the other two. But for fainter stars the three zones are in close accordance with each other, whilst the D.M. values give in comparison too small a magnitude, the difference increasing rapidly until 9·5 magnitude in the *Durchmusterung* is found to correspond to 10·5 with the wedge photometer. Prof. Bond's scale, on the other hand, corresponds fairly to that of the photometer from 7·0 magnitude up to 11·0, but beyond gives magnitudes which are too large, so that his 13·5 magnitude corresponds to about 12·5 of the wedge.

Prof. Pickering is still continuing the investigation, and proposes to give hereafter a far more complete comparison for D.M. stars brighter than 9·0 magnitude with magnitudes as given by the meridian photometer.

WASHINGTON ASTRONOMICAL OBSERVATIONS, 1883.—The volume of the Observations of the Naval Observatory, Washington, for 1883, has been published, and contains the usual routine observations, the bulk of the volume being devoted to the work with the transit-circle, beside three Appendixes, of which two, by Prof. Hall, on the orbits of the inner satellites of Saturn, and on the observation of certain stars for stellar parallax, have already been noticed. The third Appendix is on the Observatory temperature-room and the competitive trials of chronometers in 1884 and 1886. A number of double stars, the satellites of Saturn, Uranus, and Neptune, and the ring of Saturn, had been observed with the 26-inch equatorial; but no remarkable changes were noticed in the ring. The prime vertical was brought into use on November 14, 1882, and 580 observations of stars with small meridian zenith distances, at the times of the maxima of aberration, were secured. The meridian transit instrument of 5½ inches aperture, by Estel, was also used regularly, and 1408 observations secured with it. The 26-inch equatorial was used for the observation of minor planets, comets, and occultations. The Report of the Superintendent includes a notice of the Transit of Venus Expeditions of 1882, and of the reduction of the zone observations made in Chili in the years 1850-51-52, under Capt. Gilliss. A copy of the letter of the Superintendent, asking for a grant of $586,138 for the purpose of erecting the new Observatory, is also given, together with the recommendation of the architect that the entire amount be appropriated in one sum.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 *MARCH* 18–24.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on March 18

Sun rises, 6h. 7m.; souths, 12h. 8m. 2·0s.; sets, 18h. 9m.: right asc. on meridian, 23h. 54·0m.; decl. 0° 39′ S. Sidereal Time at Sunset, 5h. 56m.

Moon (at First Quarter March 20, 21h.) rises, 8h. 52m.; souths, 16h. 26m.; sets, 0h. 10m.*: right asc. on meridian, 4h. 13·0m.; decl. 16° 30′ N.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Right asc. and declination on meridian. h. m.	° ′
Mercury..	5 23	10 42	16 1	22 27·5	8 51 S.
Venus.....	5 21	10 18	15 15	22 3·8	12 50 S.
Mars......	20 47*	2 7	7 27	13 51·8	8 38 S.
Jupiter....	0 22	4 34	8 46	16 18·6	20 25 S.
Saturn....	12 22	20 21	4 20*	8 8·1	20 47 N.
Uranus...	19 41*	1 16	6 51	12 59·9	5 38 S.
Neptune..	8 17	15 57	23 37	3 43·4	18 3 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultations of Stars by the Moon (visible at Greenwich).

March.	Star.	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image. ° °
18	B.A.C. 1351	6½	18 42	19 49	162 287
18	75 Tauri	6	22 2	near approach	48 —
20	χ^3 Orionis	6	17 11	18 32	70 297
20	68 Orionis	6	22 21	23 25	136 302
23	B.A.C. 2683	6	0 23	1 13	154 264

March.	h.	
20	4	Sun in equator.
22	8	Jupiter stationary.
23	4	Saturn in conjunction with and 1° 21′ north of the Moon.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
Algol	3 0·9	40 31 N.	Mar. 24,	1 44	*m*
λ Tauri	3 54·5	12 10 N.	,, 18,	20 57	*m*
R Canis Majoris	7 14·5	16 12 S.	,, 18,	23 32	*m*
T Hydræ	8 50·2	8 43 S.	,, 18,		*M*
W Virginis	13 20·3	2 48 S.	,, 18,	1 0	*m*
δ Libræ	14 55·0	8 4 S.	,, 21,	0 14	*m*
T Libræ	15 4·4	19 36 S.	,, 18,		*M*
U Coronæ	15 13·6	32 3 N.	,, 23,	23 32	*m*
S Scorpii	16 11·0	22 37 S.	,, 23,		*M*
S Ophiuchi	16 27·8	16 55 S.	,, 20,		*M*
S Herculis	16 46·8	15 8 N.	,, 18,		*m*
U Ophiuchi	17 10·9	1 20 N.	,, 21,	3 46	*m*
			,, 21,	23 52	*m*
X Sagittarii	17 40·5	27 47 S.	,, 18,	3 0	*M*
Z Sagittarii	18 14·8	18 55 S.	,, 19,	1 0	*M*
β Lyræ	18 46·0	33 14 N.	,, 24,	2 0	m_2
S Vulpeculæ	19 43·8	27 1 N.	,, 22,		*m*
χ Cygni	19 46·3	32 38 N.	,, 19,		*M*
S Sagittæ	19 50·9	16 20 N.	,, 19,	2 0	*m*
T Vulpeculæ	20 46·7	27 50 S.	,, 23,	1 0	*m*

M signifies maximum; *m* minimum; m_2 secondary minimum.